INSTALLATION MANUAL

Foreword

Thank you for purchasing Imposol Solar Collector of all-glass evacuated tube with heat pipe.

Please take time to read this manual and familiarize yourself with the function of this product.

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Notice:

1. Consult or hire professionals in your area for your installation, the lightening arrester should be considered in installation.
2. The system has to be mounted facing south.
3. All exposed piping should be insulated properly to prevent heat loss and provide freezing protection. In the areas with ambient temperature under -5℃, electric heating wire can be served as the solution of piping freezing. Switch off the power before operation.
4. Any modifications on the structures of water heater might lead to problems during service..
5.Heat transfer mdeia could be used are pure water and antifreezer.

Introduction to Imposol series solar water heater

Component and Material:
Side cover for manifold----Nylon
Header box ---Aluminum
Manifold pipe —Copper header pipe
Insulation material----Rock Wool
Frame----Aluminum
The Foot Base---- Stainless Steel
Heat Pipe---- Vacuum tube（Borosilicate Glass 3.3）、Cooper pipe and Aluminum Fin
Tail support ---- Aluminum
Tube support: Nylon

Features:

- Very fast start-up even under low solar irradiance, due to the small heat capacity of the heat pipe combined with good thermal conductivity of the aluminum fin which contacts the inside of the inner glass tube.
- Utilization all year round even in cold climates;
- The system will still operate in the event of occasional tube breakages;
- The diffuse flat plate reflector unit behind the glass tubes can be easily assembled and increase

efficiency by 5%;
- Larger solar water systems consisting of more than one panel can be installed using parallel and/or series connections;
- Auxiliary electric booster is available.

The most obvious advantages of Imposol solar water heater

- Can be installed individually or combined with a traditional system;
- Withstand pressure;
- Can operate with occasional tubes breakage and be replaced easily;
- Works well in low-irradiance day with an electric booster
- How to avoid cold water and hot water mixing?
  If the outflow rate is limited within 8L/min, through a lot of testing such phenomenon is not obvious.
- How to clean clime after heat pipe has been used for a long time?
  Carefully remove collector tubes, screw loose the heat pipe, clean the top end with decontamination.
- What are the requirements for the piping and connections?
  Choose good aluminum and plastic compounds whose heat-resistance is over 90°C. And ask local professionals install your purchased solar water heater.

Transport and operation instruction：

Packaging and placement Requirements

1. The manifold is with carton packing; and there’s protection cap on both ends of the header pipe.
2, Prevent moisture or water infiltration when placing the cartons.
3, There are "up" signs on the carton package of the manifold, so it should be placed accordingly to avoid internal inversion.

Transportation requirements:

1, Ensure it is closely located when packing, to avoid the shaking during transport.
2, Place the bottom on a tray or other things which can load bearing.
3. Prevent infiltration of rain or water.

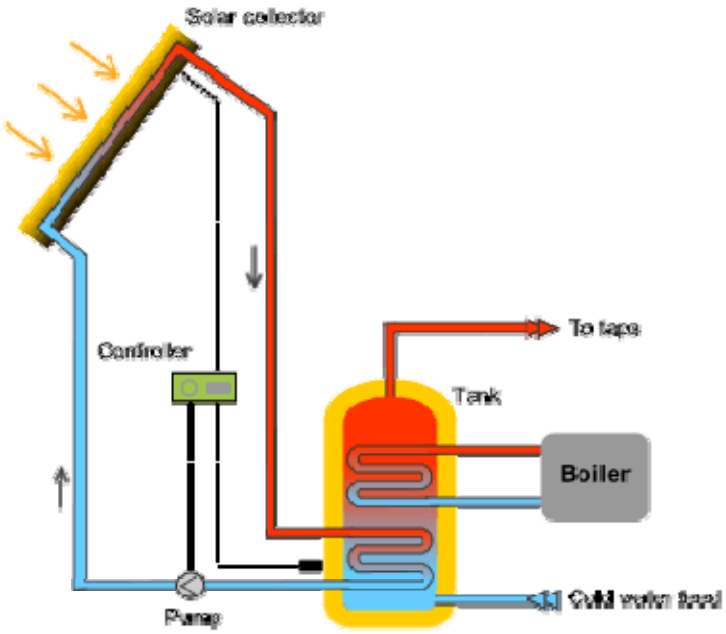
Preparation:
1. After received cartons of goods, the first thing is to check whether the cartons are deformed or damped.
2. Open the cartons and check whether the internal packaging is intact.
3. Check the quantity of the components according to the list.
4. Start the installation if everything is ready.

Using Tab. 1 to help comprehend Imposol series water heaters thoroughly.
Tab. 1: Specifications of Imposol series solar domestic water systems

Model	Iprb 58-12	Iprb 58-18	Iprb58-20	Iprb58-24	Iprb58-30
Weight for Manifold（KG)	9kgs	14kgs	15kgs	18kgs	20kgs
Packing Size for manifold	1120*170*190	1600*170*190	1760*170*190	2080*170*190	2540*170*190
Weight for Heat Pipe （KG)	29kgs	43..2 kgs	48kgs	57.6kgs	72kgs
Weight for Frame （KG)	7kgs	7kgs	7kgs	9kgs	9kgs
Packing Size for Frame	2030*120*120	2030*120*120	2030*120*120	2080*120*120	2080*120*120
Weight of the Collector（KG)	45kgs	68kgs	75kgs	90kgs	101kgs
Size of the Collector（mm)	2020*1010*200	2020*1490*200	2020*1650*200	2020*1970*200	2020*2450*200
Insulation	Rock Wool	Rock Wool	Rock Wool	Rock Wool	Rock Wool
Absorbing Area（m^2)	1.0152 m2	1.5228 m2	1.692 m2	2.0304 m2	2.538 ㎡
Max. Operating Pressure(Mpa)	0.6	0.6	0.6	0.6	0.6
Max. Title Angle	60	60	60	60	60
Min. Title Angle	30	30	30	30	30
Hailstone Resistance	≤ Ø25mm	≤ Ø25mm	≤ Ø25mm	≤ Ø25mm	≤ Ø25mm
Wind Resistance	≤30m/s	≤30m/s	≤30m/s	≤30m/s	≤30m/s
Snow load	470mm thick snow on record	470mm thick snow on record	470mm thick snow on record	470mm thick snow on record	470mm thick snow on record
Note: the air vent and the expansion tank are needed to prevent the pressure drop.					

Operational Principle

Imposol series solar water heaters are all-glass evacuated solar domestic water systems combined with heat pipes. The selective coating in the inner cover of the evacuated tubes ensures high energy absorption and low heat radiance losses, which converts solar energy into heat energy and transfers to the heat pipe by an aluminum fin. The liquid in the heat pipe changes into vapour which rises to the condenser. The heat conducts the water inside the Header pipe and the vapour becomes liquid, returning to the base of the heat pipe. This continuous circulation transfers heat from the heat pipe to the cold water in the header pipe as long as sun is heating the collectors. Hot water can be obtained by injecting cold water from the bottom of the tank.



Assembly Instruction

List of the components for Iprb 58-12 solar collector

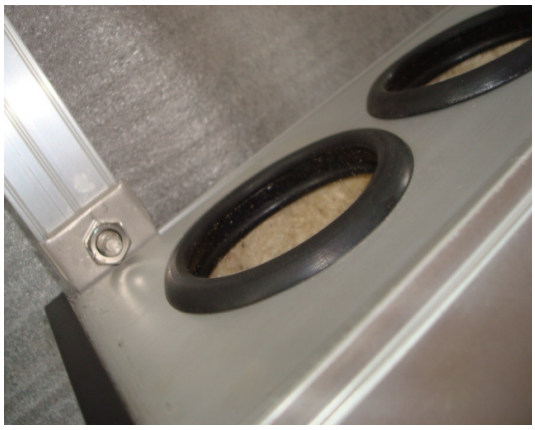
1. Manifold 1 pcs
2. Front bracket 2 pc
3. Tube bracket 1 pcs
4. Tube holder 12 pcs
5. Foot board 4 pcs
6. Press board 8 pcs
7. Reflector board
8. Screw M6*45 4 PCS
   M8*16 8 PCS
   M6*12 8 PCS

The installation procedure of the solar collector Iprb 58-12

1. Put the front support in the right position.

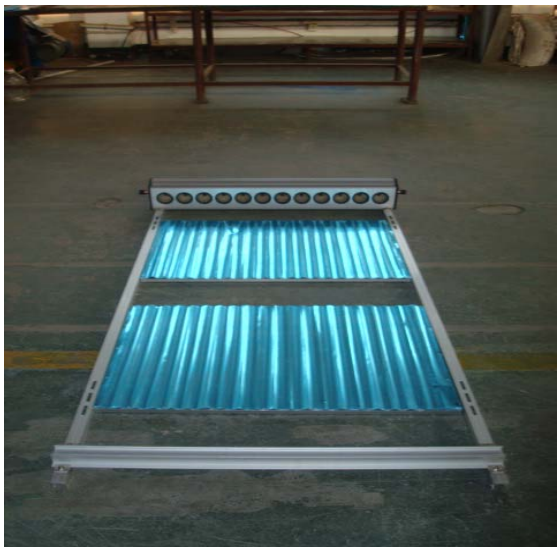
(Remark: Iprb 58-12,18,20 equip with 2 pcs of front support, Iprb 58-24,30 equip with 3 pcs of front support)

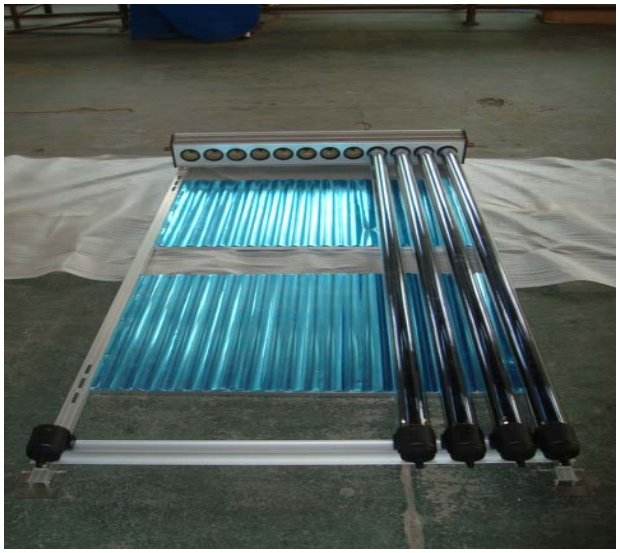
2 Put the aluminum manifold on the top



3. Install Tail support

4. Install reflector and heat-pipe tube





5.Finished product

Plumbing Instruction

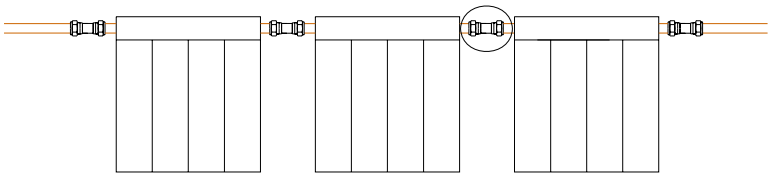
Solar Collector Connecting

The connecting of the collectors to a collector array can de designed according to the location and position of the system. Different ways of the connecting reflects the different operation efficiency. And generally parallel connection and in series connection is suitable for the collectors as shown with below drawings.

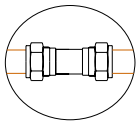
Connection in series: As shown in picture1, put two assembled collectors together, use the copper connector to connect each solar collector with its 22mm size head. Then connect the other side of the connector with pipeline. The same kind of connecting shall be carried out between all the collectors needed.

Parallel connection: First, connect the solar collector outlet and inlet with pipeline with the copper connector; then, as shown in pic2A and pic2B, the copper bends and three way copper connectors are used to connect the pipeline together.
The diameter of the pipeline can be Φ12，Φ14，Φ16 and etc, and the pipeline can be some kind of copper pipe or stainless steel pipe.

Series Connection

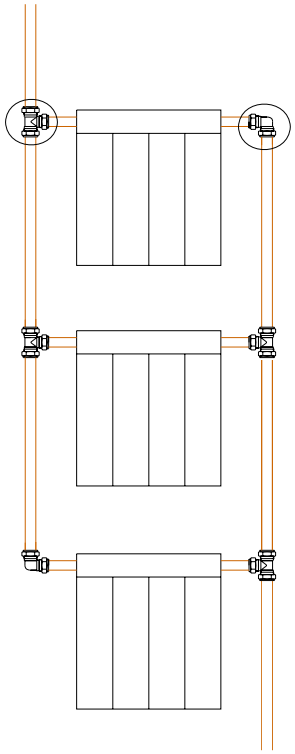


Pic 1

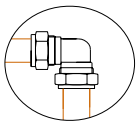


copper connector

Parallel Connection

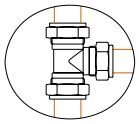


Pic 2 A:



copper bend

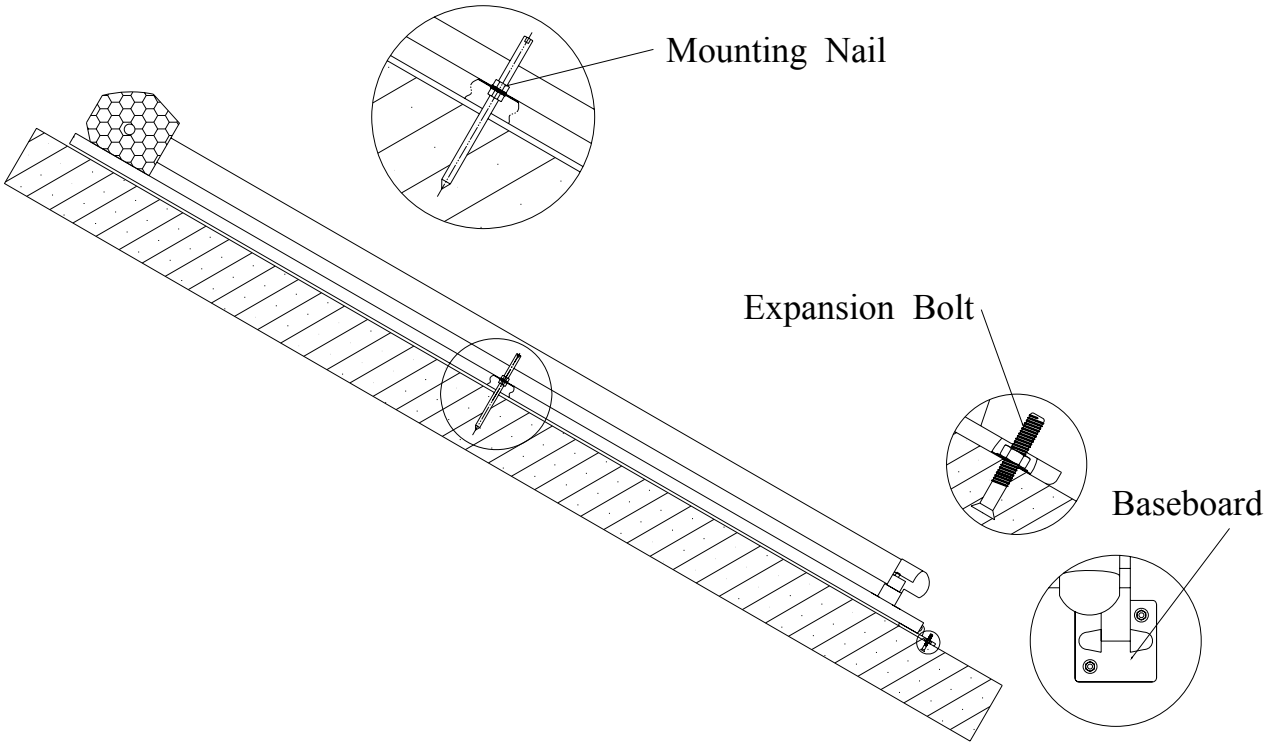
Pic 2 B:



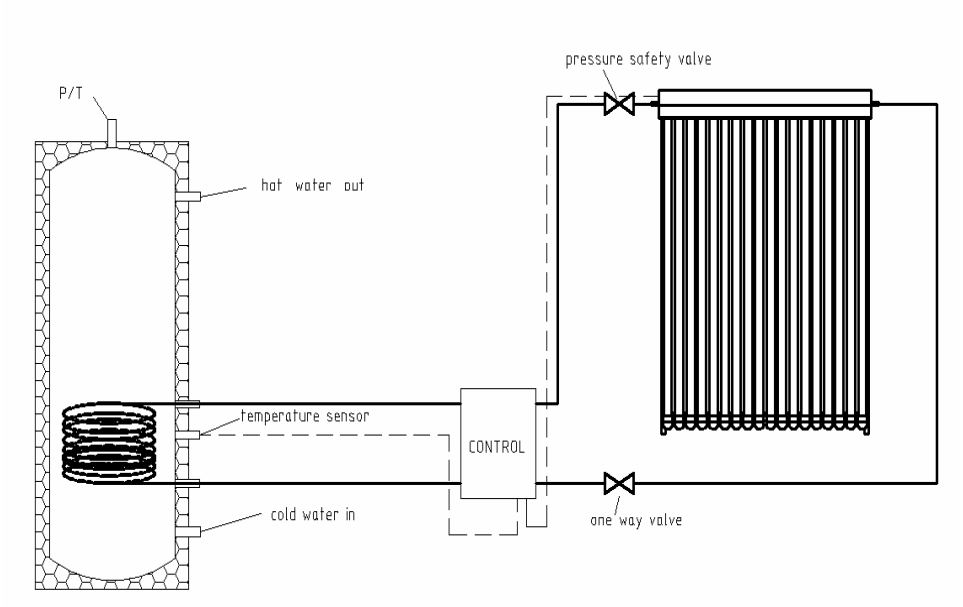
three-way copper connector

Installation on the roof:
The optional reflecting angle for Imposol series solar collector is 30 degree to 60 degree according to the local longitude and latitude.

Procedures:
1. Put the assembled frame on the roof.
2. Move the tile according to the location of the hole on the front support and baseboard for frame.
3. Move the frame away first, install the mounting nail and expansion bolts into the confirmed position of the roof.
4. Firm the screw under the hole, and insert the mounting nail through the hole on front legs, and the expansion bolts into the hole on baseboard according to its exact location.
5. Spin the screw on the top to adjust to the best location and then fix it.



Installation Sketch Picture:



Maintenance for the system

Maintenance

- There's maybe dust and oil existing in water pipe when installing. Please turn out the tap to get rid of the sundries at the first using.
- For collector surface, please do the cleaning regularly according to the local dusty rate. Raining

can clean the solar water heater and maintaining a clean surface can be higher collection efficiency.
- For the solar water heaters with reflector, please cleanout the reflector simultaneity.
- Please check the vacuum rate or whether the vacuum tube is crashed regularly. It shows that the vacuum tube rate is down and must be replaced when the barium- titanium getter get black.
- Generally, it has filter gauze setting at the outlet of tap, the scale and sundries from water pipe always generate in filter gauze, so please cleanout regularly.
- Solar water heater must be cleanout, check-up , antisepsis every 2 or 3 years. At normal time, user can disinfect the system by themselves. Such as buying chlorine disinfection of Pharmacy into the water, soaking for a period of time, and then let it be known, it can play a Sterilization effect (the use of disinfecting agents, please note the instruction, and using quantity).

Lightning protection procedures：

- Place a lightning rod using metal frame to avoid the thunder, the lightning rod should have a suitable height.
- The solar collector must be installed in the available area where it can avoid thunder, it’s important to make the top of the lightning rod on the roof higher than the top of solar collector. At the same time, the distance between the solar collector and lightning rod should be less than 3 meters.
- Make sure that the solar water tank is connected with the lightning rod or earth-wire.
- Install a power supply lightning arrester to prevent the incursion of lightning electric wave. Don’t take shower on the days with thundering and raining.

Freeze Protection

The solar collector is not suitable for frost-prone areas unless protected by a frost pretection system or device

a) For all system freeze protection is provided by controller which will circulate the pump if the collector temperature approached freezing.In area with unreliable power supply a UPS(uninterrupted power supply) unit maybe used to ensure power to controller and pump during power outages.
b) Fror areas with sustained winter temperatures below -5 C, a closed loop filled with an antifreeze heat transfer fluid should be used to provide freeze protection.Please refer to heat transfer liquid manufacturer’s specifications about the temperature ranges the liquid can withstand. Only food grade heat transfer fluids should be used.
c) Evacuated tubes are not susceptible to damage in cold weather,and our copper heat pipes are protected against damage that could result from freezing of water inside.
d) We don’t warrant the solar collector against freeze related damage

Trouble Shooting:

Troubles	**Probable Reasons**	**Solutions**
No water flows out	◴ Not enough pressure or no water supply. ◴ piping or connections have been fallen off or stemmed. ◴ Piping freezing	◴ Repair circulation or clean stems away.. ◴ Melt the piping
Low hot water temperature	◴ Low radiation ◴ Leakage occurs caused by loose or damaged valves ◴ Collector within shadow ◴ using hot water too much in one day.	◴ tighten or replace valves ◴ Take the shade away or mount the solar water heater anywhere else.
No continuous water	◴ The outflow is more than the inflow .	◴ Turn down the outflow valve .